



U.S. Department  
of Transportation

Research and  
Special Programs  
Administration

JUL 28 2000

400 Seventh Street, S.W.  
Washington, D.C. 20590

DOT-E 10427  
(EIGHTH REVISION)

EXPIRATION DATE: June 30, 2002

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Astrotech Space Operations, Inc.  
Greenbelt, MD
2. PURPOSE AND LIMITATION:
  - a. This exemption authorizes the transportation in commerce of certain Division 1.3C rocket motors with Division 2.2 compressed gases, Division 2.3 (PIH-Zone A) liquefied gases, Class 3 flammable liquids and Division 6.1 (PIH-Zone A) poisonous liquids together in the same motor vehicle, subject to the packaging and special provisions prescribed herein. This exemption provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.
  - b. The safety analyses performed in development of this exemption only considered the hazards and risks associated with transportation in commerce.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 173.61(a) regarding the shipment of Division 1.3C rocket motors in the same outside packaging with other hazardous materials; § 173.301(d) with respect to the manifolded restrictions and container valve protection requirements for transportation of compressed or liquefied gases; § 173.302 regarding the non-liquefied compressed gas cylinder shipping requirements for nitrogen, helium and argon; § 173.336 regarding the cylinder shipping requirements for dinitrogen tetroxide, liquefied; and § 177.848(d) Table regarding the shipment of Division 1.3 explosives and/or Division 2.3 PIH-Zone A gases, and/or Class 3 liquids and/or Division 6.1 PIH-Zone A liquids together in the same vehicle.

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5. BASIS: This exemption is based on the application of Astrotech Space Operations, Inc. dated June 30, 2000, submitted in accordance with § 107.109.
6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous materials description -- proper shipping name	Hazard Class/ Division	Identi- fication Number	Packing Group
Rocket motors	1.3C	UN0186	II
Helium, compressed	2.2	UN1046	n/a
Nitrogen, compressed	2.2	UN1066	n/a
Xenon	2.2	UN2036	n/a
Dinitrogen tetroxide, liquefied, (PIH-Zone A)	2.3	UN1067	n/a
Hydrazine, anhydrous	3	UN2029	I
Methylhydrazine (PIH-Zone A)	6.1	UN1244	I

7. PACKAGING AND SAFETY CONTROL MEASURES:

- a. Packagings prescribed for the "flight-ready" spacecrafts must encapsulate the entire spacecraft and any fixtures, work stands, or flight adaptor structures required to support the spacecraft. Packagings must provide a protective environmental container with continuous low flow rate gaseous nitrogen purging. They must be constructed primarily of aluminum and must be designed to support the structural loading imposed by their own weight and the transport environment, and must meet any hoisting/forklift compatibility requirements.
- b. Both packagings and spacecraft must be designed and constructed in accordance with the requirements of NASA document KHB 1700.7 entitled "Space Transportation System Payload Ground Safety Handbook" and USAF document ESMCR 127-1 entitled "Range Safety" which are on file with Office of Hazardous Materials Exemptions and Approvals (OHMEA).

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No spacecraft covered by this exemption may contain a pressure relief valve in any system which could result in venting of toxic material if actuated. The packagings must be firmly attached to the transport vehicles by either steel chain or machine bolts and must be of three basic types:

(1) Spacecraft-unique containers for spacecraft launched on the Space Shuttle, Atlas, LMLV, or Delta launch vehicles. These transport container configurations are approximately 16 feet in width and approximately 20 feet in length installed on the transporter.

(2) NASA GFE transport container/transporter for spacecraft launched on the Boeing DELTA launch vehicle. This transport container configuration is approximately 10 feet in width and up to approximately 25 feet in length installed on the transporter.

(3) Launch vehicle fairing (nose section of the rocket) for spacecraft launched on:

(i) the Lockheed Martin ATLAS launch vehicle. This transport container configuration is approximately 12 feet in width and approximately 43 feet in length installed on the transporter.

(ii) the Lockheed Martin TITAN III launch vehicle. This transport container configuration is approximately 14 feet in width and approximately 49 feet in length installed on the transporter.

(iii) the Lockheed Martin Launch Vehicle (LMLV). This transport container configuration is approximately 12 feet in width and approximately 34 feet in height installed on the transporter.

(iv) the Boeing DELTA III launch vehicle. This transport container configuration is approximately 13 feet in width and approximately 43 feet in height installed on the transporter.

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c. The "flight-ready" spacecraft may not contain more than the following quantities of hazardous materials:

- (1) Helium, compressed, 16 pounds;
- (2) Anhydrous hydrazine, 2710 pounds\*;
- (3) Methyl hydrazine, 2324 pounds\*;
- (4) Dinitrogen tetroxide, 3792 pounds;
- (5) Nitrogen, compressed, 16 pounds; and
- (6) Xenon, 180 pounds.

\* The combined total weight of anhydrous hydrazine and methylhydrazine contained in a single "flight ready" spacecraft transported on any one vehicle may not exceed 3000 pounds.

d. Each transport operation must be conducted in accordance with the requirements of ESMCR 127-1, Section 5.6.4 entitled "Convoy Operations; e.g. fore and aft escorts must be provided, all convoy elements must be in radio contact with each other throughout the convoy operation, and speed may not exceed 15 mph.

e. Shipments must be made between the Astrotech facilities in Titusville, Florida and the Kennedy Space Center using only the roads specified in the application.

f. The package must be marked "DOT-E 10427" in letters at least two inches high on at least 2 opposite sides on a contrasting background. When appropriate, the package must be marked "INHALATION HAZARD" in letters two inches high near the exemption marking.

8. SPECIAL PROVISIONS: A current copy of this exemption must be maintained at each facility where the package is offered or reoffered for transportation.
9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle only.
10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each motor vehicle used to transport packages covered by this exemption.

11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:

- o All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
- o Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this exemption, including display of its number, when this exemption has expired or is otherwise no longer in effect.

12. REPORTING REQUIREMENTS: The carrier is required to report any incident involving loss of packaging contents or packaging failure to the Associate Administrator for Hazardous Materials Safety (AAHMS) as soon as practicable. (Sections 171.15 and 171.16 apply to any activity undertaken under the authority of this exemption.) In addition, the holder(s) of this exemption must inform the AAHMS, in writing, of any incident involving the package and shipments made under the terms of this exemption.

Issued at Washington, D.C.:



Robert A. McGuire  
Associate Administrator  
for Hazardous Materials Safety

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(DATE)

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, Department of Transportation, Washington, D.C. 20590.  
Attention: DHM-31.

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The original of this exemption is on file at the above office. Photo reproductions and legible reductions of this exemption are permitted. Any alteration of this exemption is prohibited.

Copies of exemptions may be obtained from the AAHMS, U.S. Department of Transportation, 400 7th Street, SW, Washington, DC, 20590-0001, Attention: Records Center, 202-36605046.

PO: CHHOCHMAN/sln